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Indian Standard

RECOVERY TAPS FOR USE WITH DIAMOND CORE DRILLING — REQUIREMENTS

ICS 73.100.30

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

November 2001

Price Group 4

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Diamond Core and Water Well Drilling Sectional Committee had been approved by the Mechanical Engineering Division Council.

This standard is intended to initiate the technical requirements, performance and application of water swivel assemblies deployed for diamond core drilling operations as normally practiced for mineral exploration and sinking of similar bore holes for other applications.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

RECOVERY TAPS FOR USE WITH DIAMOND CORE DRILLING — REQUIREMENTS

1 SCOPE

This standard covers a typical shape, form and features of basic components, material requirements and area of application for use of recovery taps in diamond core drilling operations.

2 REFERENCES

The following standards contain provisions, which through reference in this text constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
1586 : 1988	Method for Rockwell hardness test for metallic material (Scales A-B-C-D-E-F-G-H-X) (*second revision*)
4218 (Part 1) : 1976	ISO metric screw threads: Part 1 Basic and design profile (*first revision*)
5517 : 1993	Steels for hardening and tempering — Specification (*second revision*)
10208 : 1982	Specification for diamond core drilling equipment

3 APPLICATION

The drill string comprising of drill pipes, core barrels, casings, bits, reaming shells, etc. sometimes get stuck/ snapped in the bore hole and can not be retrieved by normal drilling procedures. Such stuck up equipment is termed as 'fish' in drilling terminology. The tools known as 'Recovery Taps' are employed to recover the fish. A typical illustration of recovery tap is given in Fig. 1.

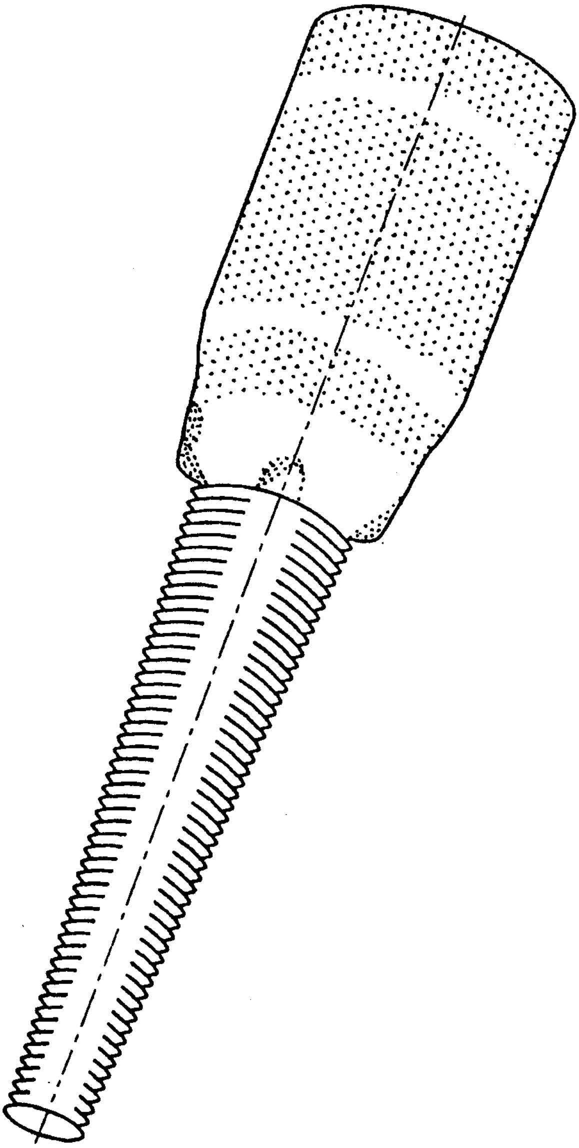


FIG. 1 TYPICAL ILLUSTRATION OF RECOVERY TAP

4 GENERAL REQUIREMENTS

4.0 Recovery tap is a cylindrical tool with cutting threads on its tapered surface and a standard drill rod connection on the top. The tapered surface has number of 'flutes' along the length to provide fresh cutting edges for generating new threads on the surface of the 'fish'. The number of flutes vary from 3 to 6 depending on the size of the tool.

4.1 The direction of threads on the connecting end and the taper end for recovery of the 'fish' shall be same, that is, right hand or left hand as the case may be.

4.2 The recovery tap shall enter freely inside or over the 'fish' (in case of bell tap) for sufficient length in order to have necessary alignment for firm grip. The length of taper is assigned accordingly.

4.3 The threads on the tapered surface shall conform to IS 4218 (Part 1).

4.4 The tapered portion of the recovery tool shall be case hardened to have hardness in the range of 50 to 55 HRC (*see* IS 1586) while the plain parallel surface (upper portion) need not be hardened to ensure easy and efficient wrench grip for holding the tool.

5 CLASSIFICATION

The recovery taps are classified into various categories as per the following criterion:

a) Based on Application:
   1) *Male recovery tap* — These have cutting threads on outer surface used to connect the fish.
   2) *Female recovery tap (Bell tap)* — These have cutting threads on inner surface.

b) Based on Direction of Threads:
   1) *Right-hand recovery tap* — Cutting threads are in clockwise direction.
   2) *Left-hand recovery tap* — Cutting threads are in anti-clockwise direction. These are used while unscrewing the drill string.

c) Based on Size/Type of Fish:
   1) Recovery taps for drill rods, drill rod couplings.
   2) Recovery taps for casings/core barrel assembly.
   3) Recovery taps for cutting tools (bits, reaming shells).

6 MATERIAL

Recovery taps shall be made from alloy steels conforming to steel designation 40Ni6Cr4Mo3 of IS 5517. These shall be suitably case hardened to have hardness on the taper surface in the range of 50 to 55 HRC (*see* IS 1586).

7 DIMENSIONS

7.1 The manufacturers, keeping in mind the criterion given in **4** shall work out the dimensional details for different sizes of recovery taps. However, dimensional details in respect of some sizes of recovery taps are given below for guidance:

a) Recovery taps for drill rods (rod recovery tap) (*see* Table 1),

b) Recovery taps for casings (casing recovery tap) (*see* Table 2), and

c) Female recovery tap for drill rods (bell tap) (*see* Table 3).

7.1.1 For identification, symbols given in Tables 1, 2 and 3 (*see* IS 10208).

8 MARKING

The recovery tap shall be marked with the following information:

a) Name or trade-mark of the manufacturer,

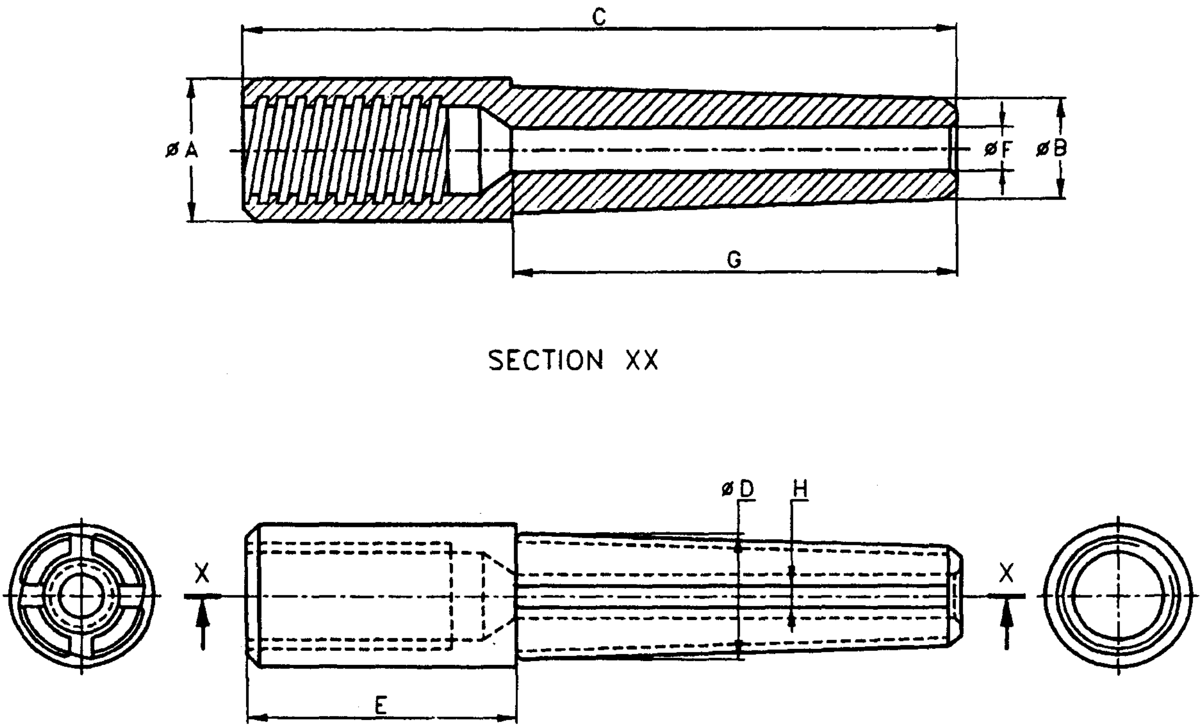
b) Size of recovery tap,

c) Type namely recovery taps for drill rods/for casings/cutting tools, and

d) Male/female recovery tap.

Table 1 Dimensions of Rod Recovery Tap

(*Clause* 7)

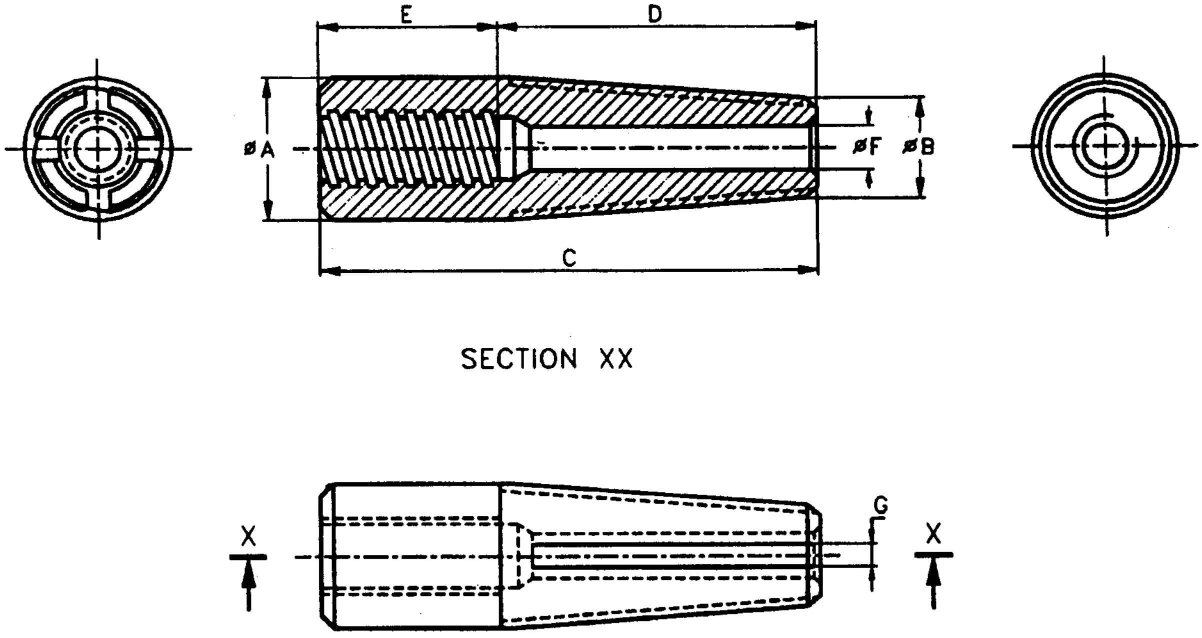


All dimensions in millimetres.

Symbol	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
HW Rod	89.09	62.10	336.00	87.09	115.00	30.00	221.00	8mm/4 No.
NW Rod	66.80	41.25	311.00	64.80	101.00	20.00	210.00	8mm/4 No.
BW Rod	54.10	31.00	277.00	52.10	88.00	15.00	189.00	7mm/3 No.
AW Rod	45.76	25.40	230.00	41.76	80.00	12.00	150.00	6mm/3 No.

Table 2 Dimensions of Casing Recovery Tap

(*Clause* 7)

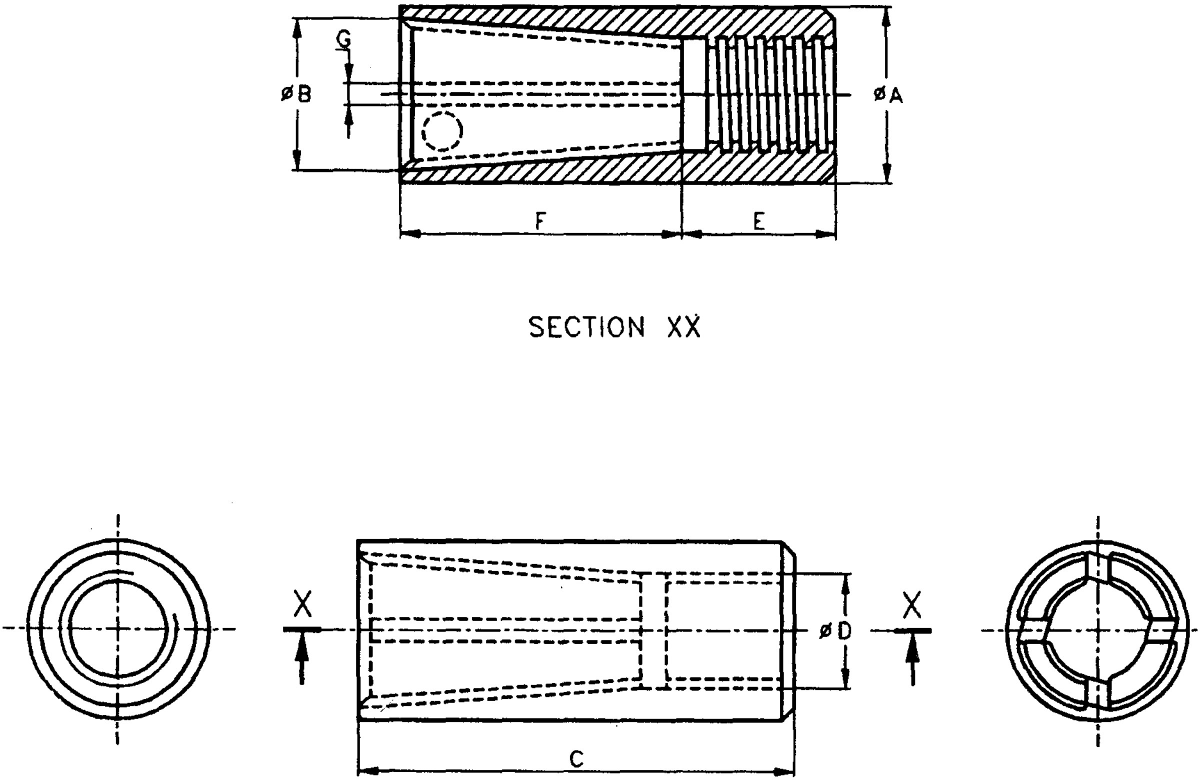


All dimensions in millimetres.

Symbol	*A*	*B*	*C*	*D*	*E*	*F*	*G*
PX	139.70	103.00	408.00	331.00	77.00	35.00	9mm/6No.
HX	114.49	84.00	347.00	270.00	77.00	35.00	9mm/6No.
NX	89.09	62.00	303.00	239.00	64.00	20.00	8mm/4No.
BX	73.15	52.40	247.00	183.00	64.00	15.00	8mm/4No.
AX	57.27	41.20	206.00	142.00	64.00	13.00	7mm/3No.

Table 3 Dimensions of Bell Tap

(*Clause* 7)



All dimensions in millimetres.

Symbol	***A***	***B***	***C***	***D***	***E***	***F***	***G***
AW	46.50	44.50	189.00	29.00	54.00	135.00	6mm/3No.
BW	58.00	56.00	213.00	37.00	63.50	149.50	7mm/3No.
NW	74.00	72.00	241.00	52.00	76.20	164.80	8mm/4No.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Diamond Core and Water Well Drilling Sectional Committee, ME 21

Organization	*Representative(s)*
Geological Survey of India, Kolkata	Shri B. Kumar (*Chairman*) Shri R. Sundararajan (*Alternate* I) Shri V. K. Kansal (*Alternate* II)
Atlas Copco (India) Ltd, Pune	Shri S. Datta Majumdar
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Indian Pump Manufacturers Association, Mumbai	Shri Harshad M. Joshi Shri S. L. Abhyankar (*Alternate*)
Indian School of Mines, Dhanbad	Shri C. K. Jain
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United Nations Children's Fund, New Delhi	Shri Vishwas Joshi Shri Arun K. Mudgil (*Alternate*)

(*Continued on page 7*)

(Continued from page 6)

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